TRANSLATION PATENT COOPERATION TREATY POT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 63254	FOR FURTHER ACTION	See Form PCT/IPEA	<i>J</i> 416		
International application No. PCT/EP2004/053040	International filing date (day/m 22.11.2004	ponth/year) Priority date (day/mo	-		
International Patent Classification (IPC) or nati H03M1/36	onal classification and IPC				
Applicant ATMEL GRENOBLE					
This report is the international prelin under Article 35 and transmitted to the		blished by this International Prelimina 36.	ry Examining Authority		
2. This REPORT consists of a total of	6	sheets, including this cover sheet.			
3. This report is also accompanied by A	NNEXES, comprising:				
a. (sent to the applicant and	to the International Bureau) a to	otal of 2	sheets, as follows:		
	sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative				
		s Authority considers contain an amen ed, as indicated in item 4 of Box No.			
	Bureau only) a total of (indicate	type and number of electronic carrier(s	9))		
		, containing a seque	nce listing and/or tables		
related thereto, in computer Section 802 of the Administ	•	ed in the Supplemental Box Relating t	o Sequence Listing (see		
This report contains indications relati	ng to the following items:				
Box No. I Basis of the	report				
Box No. II Priority					
Box No. III Non-establi	shment of opinion with regard to	novelty, inventive step and industrial	applicability		
Box No. IV Lack of unit	y of invention				
	atement under Article 35(2) with dexplanations supporting such s	h regard to novelty, inventive step or in tatement	dustrial applicability;		
Box No. VI Certain doc	uments cited				
Box No. VII Certain defe	ects in the international application	on			
Box No. VIII Certain obse	ervations on the international app	plication			
Date of submission of the demand	Date of c	completion of this report			
Name and mailing address of the IPEA/EP	Authoriz	ed officer			
Facsimile No	Telephor	ne No			

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/053040

Вох	No. I	Basis	of the report
1.		regard to the l	anguage, this report is based on the international application in the language in which it was filed, unless otherwise item.
			based on translations from the original language into the following language anguage of a translation furnished for the purposes of:
		internat	ional search (Rule 12.3 and 23.1(b))
		publicat	tion of the international application (Rule 12.4)
		internat	ional preliminary examination (Rule 55.2 and/or 55.3)
2.	rece	•	elements of the international application, this report is based on (replacement sheets which have been furnished to the response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to
		the internation	nal application as originally filed/furnished
	\boxtimes	the description	n:
		pages 1-	g as originally filed/furnished
		pages*	received by this Authority on
		pages*	received by this Authority on
	\boxtimes	the claims:	
		nos.	as originally filed/furnished
		nos.*	as amended (together with any statement) under Article 19
		nos.*1-3	01.09.2005 with letter received by this Authority on of 29.08.2005
		nos.*	received by this Authority on
	\boxtimes	the drawings:	
		sheets 1	/5-5/5 as originally filed/furnished
		sheets*	received by this Authority on
		sheets*	received by this Authority on
		a sequence lis	sting and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3.		The amendme	ents have resulted in the cancellation of:
		the desc	cription, pages
		the clain	ms, nos.
			wings, sheets/figs
		the sequ	nence listing (specify):
		any tabl	le(s) related to sequence listing (specify):
4.			as been established as if (some of) the amendments annexed to this report and listed below had not been made, since en considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
		the desc	cription, pages
		the clain	ms, nos.
		the draw	wings, sheets/figs
		the sequ	nence listing (specify):
		any tabl	le(s) related to sequence listing (specify):
*	If ite	m 4 applies, so	me or all of those sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement					
1.	Statement				
	Novelty ((N)	Claims	1-3	YES
			Claims		NO
	Inventive	step (IS)	Claims		YES
			Claims	1-3	NO
	Industria	l applicability (IA)	Claims	1-3	YES
			Claims		NO

- 2. Citations and explanations (Rule 70.7)
 - 1. Reference is made to the following documents:
 - **D1:** US-A-5 396 131 (MIKI TAKAHIRO ET AL) 7 March 1995 (1995-03-07)
 - **D2:** US-A-5 539 406 (MIKI TAKAHIRO ET AL) 23 July 1996 (1996-07-23)
 - 2. **D4** was not cited in the international search report. A copy of said document is attached.
 - **D4:** US-A-2003/0067346 (GAGGL RICHARD) 10 April 2003 (2003-04-10)

Claim 1

- 2. The present application fails to meet the requirements of PCT Article 33(1), since the subject matter of claim 1 does not involve an inventive step as defined by PCT Article 33(3).
- 2.1 **D1** is considered to be the closest prior art.
- 2.2 **D1** describes (the references between parentheses apply to said document) an analog-to-digital converter having differential inputs and a parallel structure (column 1, lines 8 to 13 and figures 1 to 4), including at least

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement one network of N series resistors of value r (column 6, lines 8 to 30 and figure 2, block 5, figure 3, resistors 111 to 115) and a network of N comparators (column 6, lines 8 to 17 and figure 2, blocks 61 to 6n), such that: the network of series resistors receives a reference voltage (figure 3, blocks 101 and 102) and has a constant current running through it (column 6, lines 18 to 30); the rank i comparator (figure 4, block 61) essentially includes a double-differential, fourinput amplifier (from column 7, line 54 to column 8, line 55 and figure 4, block 400 and inputs VA1, VA2, VR1a and VR1b), of which two inputs receive a differential voltage VS-VN to be converted (from column 6, line 41 to column 7, line 53 and figure 4, inputs VA1 and VA2), a third input is connected to a rank i resistance of the network (column 6, lines 46 to 50 and figure 4, VR1a), and a fourth input is connected to a rank N-i resistance of the network (column 6, lines 46 to 50 and figure 4, VR1b); said double-differential amplifier provides a voltage representing a difference having the form (VS-VN)-(N-2i)r.Io (tables 2 and 3), and the comparator switches one way or the other according to the level of the voltage VS-VN and according to

2.3 The subject matter of **claim 1** differs from **D1** in that the network of resistors is supplied with a variable

column 7, line 52 and figures 12 to 13).

the rank i of the comparator when the sign of said

difference changes (from column 6, line 58 to

Box No. V

	citations and explanations supporting such statement
:	reference voltage from a servo circuit by means of
,	which the voltage level of the middle of the network of
:	resistors is slaved to a voltage equal to the common
1	mode voltage of the differential voltage to be
	converted.

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;

- 2.4 The problem that the present invention is intended to solve can be considered to be that of implementing an analog-to-digital converter having differential inputs and a parallel structure that prevents possible erroneous indications caused by spurious variations on the same circuit.
- 2.5 According to the description provided therein, the device of **D4** (page 2, paragraph [0019]; page 3, paragraphs [0045] to [0046]; claims 1, 5, 10 and figure 2, Vfloat) has the same advantages as those mentioned in the present application. Consequently, the inclusion of this feature in the analog-to-digital converter described in D1 is a routine design measure for a person skilled in the art seeking to solve the stated problem.
- 2.6 Consequently, the subject matter of claim 1 does not involve an inventive step as defined by PCT Article 33(3).

Claims 2 and 3

3. Dependent claims 2 and 3 contain no feature which, when combined with the features of any one of the claims to which they refer, defines subject matter that complies with the PCT requirements of inventive step (PCT Article 33(3)), for the following reasons:

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- the additional features defined in claim 2 are well known in analog-to-digital converters having a parallel structure, and therefore the subject matter of said claim does not involve an inventive step;
- the additional features defined in claim 3 are disclosed in D1 (figure 4).

Industrial applicability

4. The subject matter of **claims 1 to 3** is industrially applicable in the field of analog-to-digital converters.